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APPEAL BRIEF - 13 PAGES

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN THE APPLICATION OF:

MARK A. HACKLER ET. AL.

SERIAL NO.: **10/759,814**

FILED: **JANUARY 15, 2004**

CONFIRMATION NO.: **8254**

CASE NO.: **IM1315USNA**

GROUP ART UNIT: **1734**

EXAMINER: **JAMES D. SELLS**

FOR: **APPARATUS FOR THERMAL DEVELOPMENT**

APPEAL BRIEF UNDER 37 CFR 41.37

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with 37 CFR 41.37, the following is a brief in support of the Appeal filed March 25, 2008, appealing the Final Rejection dated February 28, 2008 of Claims 31 through 43, 45 through 48, 52 through 66 and 74 through 76.

Please charge the Appeal Brief fee of $510.00, pursuant to 37 CFR 41.20(b)(2), to Deposit Account No. 04-1928 (E. I. du Pont de Nemours and Company). The Commissioner is hereby authorized to charge any additional fees which may be required or credit any overpayment to Deposit Account No. 04-1928.

REAL PARTY IN INTEREST

The real party in interest is E. I. du Pont de Nemours and Company (the "Assignee"), 1007 Market Street, Wilmington, Delaware 19898, to whom this application has been assigned, said assignment being recorded at Reel 014727, Frames 0617, 0618 and 0619.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to the Appellants, the Appellants' legal representative, or the Assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

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STATUS OF CLAIMS

Claims 31 through 43, 45 through 48,52 through 66 and 74 through 76, as set forth in the Claims Appendix, are pending, rejected and under appeal. Claims 1 through 30 and 44 have been cancelled. Claims 49 through 51 and 67 through 73 are objected to as being dependent upon a rejected claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 77 is allowed.

STATUS OF AMENDMENTS

All amendments filed subsequent to the Final Rejection have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

As described in the specification on page 4 at lines 14 through 20 and shown in Figures 1 and 2, the present invention as recited in Claims 1, 75 and 76 comprises an apparatus 10 for forming a relief pattern from a photosensitive element 16 containing a composition layer having an exterior surface 17 and capable of being partially liquefied. Specifically, the apparatus 10 comprises means for supplying 38 an absorbent material 35 to the exterior surface 17 of the composition layer (see page 7, lines 22 through 36, and Figure 1). The apparatus 10 is provided with a means for relative motion between a drum 18 supporting the photosensitive element 16 and the hot roller 38, so that the element 16 and the absorbent material 35 can be brought into contact with the other (see page 7, line 37 to page 8, line 8, and Figure 1). The apparatus also comprises a means for heating 30 and 38 the exterior surface 17 of the composition layer to a temperature Tr sufficient to cause a portion of the layer to liquefy and cause one or more components to form a vapor (see page 7, lines 3 through 30, and Figure 1). The vapor formed during thermal development is controlled in order not to disturb the relief surfaces of the photosensitive element 16 being developed by collecting the vapor during heating, means for confining the vapor and means for managing removal of the vapor (see page 8, line 33 to page 9, line 6). The apparatus 10 further includes means for collecting the vapor comprising a collection member 55 positioned at the means for supplying 38 (see Page 9, lines 7 through 36, and Figure 1). The means for collecting vapor can also include a shroud 56 located on a backside of the hot roller 38 opposite the drum 18 to substantially enclose the collection member 55 (see page 10, lines 4 through 22, and Figure 1). One embodiment (Claim 75) of the apparatus 10 further comprises a separation unit 70 for

removing the collected vapor and for the collected vapor that condenses to form condensate from the air (see page 12, lines 19 to page 13, line 11 and Figure 2). Another embodiment (Claim 76) of the apparatus comprises means for confining the collected vapor and the collected vapor that condenses to form condensate, connected to the collecting means and oriented vertically or substantially vertically so that the condensate flows under gravity for removal from the apparatus 10 (see page 11, line 15 to page 12, line 18 and Figure 1). The means for confining the vapor is a series of interconnected conduits 66 that direct the vapor from the collection member 55 toa a means for managing the removal of the vapor (see Figure 1).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 31 through 43, 52 through 66 and 74 through 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. (WO 01/18604). Claims 45 through 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. in view of Applicants' admitted prior art.

ARGUMENT

Johnson et al. describe a method and apparatus for thermal processing a photosensitive element. The thermal development apparatus 10a is ventilated by a vacuum fan unit 368 which controls fumes resulting from heating the composition layer. The exhaust from the vacuum fan unit 368 is vented through a conduit 370. Along a bottom of a plenum associated with the vacuum fan unit 368 is a plurality of inlets 369. The vacuum fan unit 368 pulls air circulating through the apparatus 10a to the exhaust conduit 370. The method of collecting the air to an exhaust port in the apparatus as described by Johnson et al. is ineffective and unsatisfactory in managing the presence of components that can condense in the vapor and/or have condensed to form droplets in the vapor before reaching the exhaust port. As described in the background of the present specification, the presence of condensable vapor and already condensed droplets presents problems in the cleanliness and operation of the apparatus and can damage the photosensitive elements that are being thermally treated. First, liquid droplets flowing with the exhaust air can collide and deposit a liquid film on parts of the apparatus. Additionally, any part of the apparatus in the flow of air to the exhaust can provide a surface for condensation of the vapor and an accumulation of the liquid condensate, particularly if the part is cooler than the dew point of the vapor mixture. Thirdly, the rate of condensation of the condensable components in the vapor is time and temperature dependent so that collection at a location far from the heating station offers more time for cooling and condensate formation and subsequent deposition inside the processor.

The creating of airflow to an exhaust collection as disclosed by Johnson et al. does not anticipate or render obvious the present invention which includes *means for collecting the vapor at the means for supplying at hot roller 38,* as recited in Claim 31. The apparatus of Johnson et al. exhausts air after circulating within the entire apparatus at the exhaust conduit 370 which is disposed at a location remote from the means for supplying 38 where the vapor is generated. The circulating air may include some vapor that exhausts from the apparatus. However, the vapor that escapes into the apparatus environment often cools and condenses onto various surfaces in the apparatus, and thus, not all the vapor that is generated, is "collected" by the exhaust system. Even if one was to consider the inlets 369 into the plenum for the vacuum fan unit 368 as collecting the vapor in the apparatus by Johnson et al., the location of the inlets 369 are still removed enough from the heating station that vapor escapes from the heating station region into other environs of the apparatus, and provides no or only minimal containment of the vapor. In either case, the exhaust system described by Johnson et al. is so remote from the location at which the vapor is generated that the exhaust system could not be considered a means for collecting the vapor *at the means for supplying*, as recited in Claim 31. The blowing of air to cool the photosensitive element that is described by Johnson et al. is not a means for collecting the vapor, nor a means for directing the vapor. In effect, the blowing of air in Johnson et al. disperses the vapor throughout the environment of the apparatus and encourages cooling and condensation of components in the vapor.

Claim 31 recites that means for collecting the vapor is located *at the means for supplying the absorbent material to the exterior surface of the composition layer*. Collecting the vapor at the means for supplying is described in the specification on page 9 at lines 7 through 20, and shown in the embodiment represented by Figure 1. Claim 31 is not obvious from the disclosure of Johnson et al. since Johnson et al. do not teach or suggest having a means for collecting the vapor at the means for supplying the absorbent material to the exterior surface of the composition layer. Johnson et al. do not teach or suggest a collection means, such as a vent, plenum, or shroud, at the location where the absorbent material is supplied to the exterior surface of the composition layer.

The Examiner has stated that Applicants' claimed apparatus is merely a mechanical modification and is therefore an obvious expedient over the configuration disclosed by Johnson et al. However, Johnson et al. do not acknowledge any problems with vapor forming condensate throughout the apparatus, and thus do not teach or even suggest structural elements in the apparatus to handle condensate formed from the vapor throughout the apparatus. The blower 356 and the optional shroud 358 in Johnson et al. that extends around the drum in close proximity to surface 22 of the drum are part of a cooling means 355 for cooling the photosensitive element. Johnson et al. do not teach or suggest that the blower and

optional shroud could provide any other function other than for cooling of the photosensitive element. The machine frame is ventilated by a vacuum fan unit 368, which forms a plenum with the underpart of conveyor 144a, to control fumes from heating the composition layer on the sheet. The inlets for the unit 368 are along the bottom of the unit such as through a plurality of inlets 369. Johnson et al. acknowledge that the vacuum fan unit is used to control fumes from heating of the photosensitive element, but the inlets to the plenum and the vacuum fan unit are remote from where the vapors are generated. Thermal development processors having the vacuum fan unit exhausting air from inside the processor as disclosed by Johnson et al. have only limited success in managing the vapor and condensate. Johnson et al. fail to acknowledge that the vapors can remain within the processor and then condense and drip uncontrolled onto different areas within the processor, and even onto the photosensitive element.

Johnson et al. fail to teach or suggest that vapor is most likely to form when the composition layer is reaching or reaches the temperature to liquefy. Johnson et al fail to teach or even suggest that the vapor may be collected where the vapor is most likely to form at the nip where the exterior surface of the photosensitive element contacts the absorbent material. Collecting the vapor at the means for supplying is described in the present specification on page 9 at lines 7 through 20, and shown in an embodiment represented by Figure 1. Applicants specifically indicate in lines 15 through 19 to collect the vapor where the photosensitive element contacts the absorbent material, *i.e., at the means for supplying*, since the vapor is most likely to form when the composition layer is reaching or reaches the temperature to liquefy.

The Examiner asserts that a change in the arrangement or location of mechanical elements represents an obvious expedient and that mechanical equivalents would be merely a matter of choice to one of ordinary skill in the art. But since Johnson et al. fail to discover that: 1) there are problems with vapor forming condensate throughout the apparatus; 2) vapor is most likely to form when the composition layer is reaching or reaches the temperature to liquefy; and 3) vapor is likely to form at the nip where the exterior surface of the photosensitive element contacts the absorbent material, there is no motivation to one of ordinary skill in the art to make such a change in the arrangement or location of mechanical elements. It is insufficient to assert that it is obvious to change the location or arrangement of mechanical elements disclosed in a prior art apparatus unless there is some clear reasoning or motivation in the reference to suggest to one of ordinary skill in the art to try the claimed

invention. Thus, Claim 31 is not obvious from the disclosure of Johnson et al. since Johnson et al. do not acknowledge the above-mentioned problems with vapor forming condensate throughout the apparatus, and thereby do not teach or suggest having a means for collecting the vapor at the means for supplying the absorbent material to the exterior surface of the composition layer.

Regarding independent Claims 75 and 76, Johnson et al. fail to teach or suggest that vapor is most likely to form when the composition layer is reaching or reaches the temperature to liquefy. Applicants specifically indicate on page 9, at lines 7 through 15, to collect the vapor as the vapor emits from the photosensitive element while the element is being heated, i.e., *at the heating means*, since the vapor is most likely to form when the composition layer is reaching or reaches the temperature to liquefy. Even if one were to arguably construe the plenum or shroud of Johnson et al. as a means for collecting the vapor at or adjacent the heating means, Johnson et al. do not teach or suggest a separation unit for removing vapor from air, a means for confining the collected vapor in a vertical orientation, or a means for maintaining the collected vapor in its vaporized state. Johnson et al. do not teach or suggest *a separation unit for removing the collected vapor and the collected vapor that condenses to form condensate from the air,* as recited in Claim 75. Even if one were to construe the plenum or shroud of Johnson et al. as a means for collecting the vapor at or adjacent the heating means, Johnson et al. clearly do not teach or suggest a separation unit for managing the removal of the vapor, vapor and condensate, or condensate from the air.

Regarding Claim 76, Johnson et al. do not teach or suggest a means for confining the collected vapor and the collected vapor that condenses to form condensate, *which is connected to the collecting means and oriented vertically or substantially vertically so that the condensate flows under gravity for removal from the apparatus.* Even if one were to construe the shroud or plenum of Johnson et al. as a means for collecting the vapor at or adjacent the heating means, Johnson et al. do not suggest a means for confining the collected vapor and/or condensate in a vertical orientation so that the condensate flows under gravity for removal from the apparatus. In Figure 15 of Johnson, the shroud 358 arguably may direct the vapor, but does not confine the vapor (or condensate) in a vertical orientation for gravity flow removal from the apparatus. Also, the plenum under the conveyor 144a arguably may collect the vapor, but does not confine the vapor (or condensate) in a vertical orientation for gravity flow removal from the apparatus.

The rejection of Claims 45 through 48 as being unpatentable over Johnson et al. in view of Applicants' admitted prior art, under 35 U.S.C. 103(a), is respectfully traversed. Claims 45 through 48 either directly or indirectly depend from independent Claim 31 and thereby incorporate the limitation of the means for collecting the vapor at the supplying means. Johnson et al. alone or in combination with the prior art do not teach or suggest means for collecting the vapor *at the supplying means* and having all or a portion of the collected vapor form condensate for collection in a pan. Regarding Claim 48, Johnson et al. in combination with the prior art suggests only exhausting air with vapor (not collected at the supplying means) with a vacuum fan unit under which resides the collection pan. Johnson et al. alone or in combination with the prior art do not teach or suggest other means for collecting the condensate including the use of piping materials in which the condensate is soluble, pumping the condensate from the apparatus, dispensing the condensate onto a condensate absorbent material, and exposing the condensate to actinic radiation (see page 14 at line 25 to page 15 at line 29).

Further regarding Claim 45, Johnson et al. alone or in combination with the prior art do not teach or suggest means for confining the vapor and the condensate. To confine is to hold within a location, and clearly the prior art did not confine the vapor (within the processor) or the condensate (within the pan) since according to the description of the prior art in the specification page 3 at lines 17 through 22, the vapor escaped with the exhaust air and the vapor condensed prior to reaching the condensate pan.

Further regarding Claim 46, Johnson et al. alone or in combination with the prior art do not teach or suggest means for managing removal of the vapor and the condensate from the apparatus. Means for managing removal of the vapor and the condensate are described in the specification on page 12 at line 19 through page 15 at line 29, and specifically include, for example, a separation unit 70, filtration, minimizing air flow disturbances, use of piping materials in which the condensate is soluble, pumping the condensate from the apparatus, dispensing the condensate onto a condensate absorbent material, and exposing the condensate to actinic radiation. Furthermore, regarding Claim 47, Johnson et al. alone or in combination with the prior art do not teach or suggest means for separating the vapor from the condensate, particularly as described in embodiments of the separation unit and filtration.

Claims 32 through 43, 45 through 48, 52 through 66 and 74 are dependent from Claim 31. Therefore, such claims incorporate the patentable novelty of Claim 31, and the allowance of such claims over Johnson et al. appears to be in order for at least the reasons given above

with respect to Claim 31 since such claims depend from Claim 31 and thereby incorporate the patentable novelty of Claim 31.

Accordingly, the Board of Patent Appeals and Interferences is respectfully requested to find that the Examiner erred in the rejection of Claims 31 through 43, 45 through 48, 52 through 66 and 74 through 765 in this application and that such claims are therefore allowable.

Respectfully submitted,

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Dated: May 27, 2008

CLAIMS APPENDIX

31. An apparatus for forming a relief pattern from a photosensitive element containing a composition layer having an exterior surface and capable of being partially liquefied, comprising:

means for supplying an absorbent material to the exterior surface of the composition layer;

means for heating the exterior surface of the composition layer to a temperature Tr sufficient to cause a portion of the layer to liquefy and cause one or more components in the layer to form a vapor; and

means for collecting the vapor at the means for supplying.

32. The apparatus of Claim 31 further comprising:

means for supporting the photosensitive element, wherein at least one of the means for supplying and the means for supporting are movable relative to the other; and

means for contacting the photosensitive element with the absorbent material to allow at least a portion of the liquefied material of the composition layer to be absorbed by the absorbent material.

33. The apparatus of Claim 32 further comprising means for separating the photosensitive element from the absorbent material.

34. The apparatus of Claim 32 wherein the means for supplying comprises a roller mounted for rotation in a first frame portion.

35. The apparatus of Claim 32 wherein the means for supporting comprises a drum mounted for rotation in a second frame portion, the drum having an outer circumferential surface adapted to support the photosensitive element.

36. The apparatus of Claim 32 wherein the means for heating is selected from the group consisting of:

a first heating means for applying heat to the exterior surface of the composition layer adjacent where the absorbent material contacts the layer, the first heating means adapted to heat the exterior surface of the layer to temperature T1;

a second heating means for heating the supplying means to a temperature capable of heating the exterior surface of the composition layer to a temperature T2 while the absorbent material is contacting the exterior surface of the layer;

a third heating means for heating the supporting means to a temperature capable of heating the exterior surface of the composition layer to a temperature T3;

a combination of the first heating means and the second heating means;

a combination of the first heating means and the third heating means;

a combination of the second heating means and third heating means; and

a combination of the first heating means, the second heating means, and the third heating means.

37. The apparatus of Claim 31 further comprising means for confining the vapor.

38. The apparatus of Claim 31 further comprising means for managing removal of the vapor.

39. The apparatus of Claim 38 wherein the means for managing comprises means for exhausting the vapor.

40. The apparatus of Claim 39 wherein the means for exhausting the vapor is an external exhaust collection system.

41. The apparatus of Claim 38 wherein the means for managing further comprises means for maintaining a non-recirculating flow of the vapor.

42. The apparatus of Claim 38 wherein the means for managing further comprises means for maintaining the vapor at a temperature sufficient to keep the vapor in its vaporized state for removal.

43. The apparatus of Claim 38 wherein the means for managing further comprises means for cooling the vapor to a temperature sufficient to condense one or more of the components.

45. The apparatus of Claim 31, wherein all or a portion of the vapor forms condensate, further comprising means for confining the vapor and the condensate.

46. The apparatus of Claim 31, wherein all or a portion of the vapor forms condensate, further comprising means for managing removal of the vapor and the condensate.

47. The apparatus of Claim 45 wherein the managing means further comprises means for separating the vapor from the condensate.

48. The apparatus of Claim 31, wherein all or a portion of the vapor forms condensate, further comprising means for collecting the condensate.

52. The apparatus of Claim 46 further comprising means for exhausting the vapor.

53. The apparatus of Claim 52 further comprising means for maintaining a nonrecirculating flow of the vapor.

54. The apparatus of Claim 52 wherein the means for exhausting the vapor comprises one or more parts composed of a condensate absorbent material.

55. The apparatus of Claim 46 wherein the means for managing further comprises means for transporting the vapor through a condensate absorbent material.

56. The apparatus of Claim 31 wherein the heating means is a heating station.

57. The apparatus of Claim 31 wherein the means for collecting the vapor is a manifold.

58. The apparatus of Claim 31 further comprising means for exhausting the vapor collected by the collecting means.

59. The apparatus of Claim 31 further comprising means for shrouding the vapor at or adjacent the heating means.

60. The apparatus of Claim 31 wherein the means for heating generates heated air, the apparatus further comprising means for removing the heated air.

61. The apparatus of Claim 31 wherein the means for heating generates heat, the apparatus further comprising controlling the heat.

62. The apparatus of Claim 31 further comprising means for supplying air at the means for collecting.

63. The apparatus of Claim 31 further comprising means for directing the vapor to the means for collecting.

64. The apparatus of Claim 62 wherein the means for supplying air is from a source of pressurized air.

65. The apparatus of Claim 62 wherein the means for supplying air is from air exhausted from the apparatus.

66. The apparatus of Claim 38 wherein the means for managing removal of the vapor comprises a separation unit.

74. The apparatus of Claim 31 wherein the means for collecting the vapor is at or adjacent to a nip where the exterior surface of the photosensitive element contacts the absorbent material.

75. An apparatus for forming a relief pattern from a photosensitive element containing a composition layer having an exterior surface and capable of being partially liquefied, comprising:

means for heating the exterior surface of the composition layer to a temperature sufficient to cause a portion of the layer to liquefy and cause one or more components in the layer to form a vapor in air;

means for collecting the vapor at or adjacent the heating means; and

a separation unit for removing the collected vapor and/or the collected vapor that condenses to form condensate from the air.

76. An apparatus for forming a relief pattern from a photosensitive element containing a composition layer having an exterior surface and capable of being partially liquefied, comprising:

means for heating the exterior surface of the composition layer to a temperature sufficient to cause a portion of the layer to liquefy and cause one or more components in the layer to form a vapor;

means for collecting the vapor at or adjacent the heating means; and

means for confining the collected vapor and the collected vapor that condenses to form condensate, connected to the collecting means and oriented vertically or substantially vertically so that the condensate flows under gravity for removal from the apparatus.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE